The following components have been identified as being located within the boundaries of the Broward County subregional model. The component descriptions are from Alternative D13_R (selected as the initial draft plan for the C&SF Comprehensive Review Study), and from other project elements (OPEs). These components have been outlined in the component descriptions in a very conceptual way. Some additional level of incidental design has been expended on several of the components in order to allow the component to be included in the subregional model.

Component L

Geographic Region: Lower East Coast Service Area

Component Title: Change coastal wellfield operations

Purpose: Shift demands from eastern wellfields to western facilities away from the saltwater interface to reduce impact of salt water intrusion.

Operation: For coastal utilities in the Lower East Coast Service Area which are experiencing an increased threat of saltwater intrusion, demands will be shifted from the eastern facilities to the western facilities away from the saltwater interface. The volume shifted is dependent upon the degree of saltwater intrusion but is generally proportional to the increase in demands between the 1995 existing conditions and the 2050 future without project conditions unless otherwise noted.

Design: For this alternative the following utilities have a portion of their demands shifted inland and include Riviera Beach, Lake Worth, Lantana, Manalapan, Boca Raton, Hollywood (including Broward County 3B and 3C), Dania, Miramar, Broward County 3A, Hallandale and Florida City. Redistribution of demands for Lake Worth, Lantana, Manalapan, Boca Raton and Florida City are generally consistent with the Lower East Coast Water Supply Plan. For the City of Riviera Beach, demands will be shifted from the eastern facilities to the western facilities with the western facilities absorbing the increased demand between the 1995 and 2050 conditions. For this alternative, the City of Miramar's eastern wellfield will be placed on standby and all demands will be met from the western wellfield. For the City of Hollywood, Hallandale, Dania, Broward County 3A, and Broward County 3B/3C all these wellfields will be placed on standby and the entire demand (with the exception of 4 MGD from the Floridan aquifer for Hollywood) will be met from the South Broward County Regional wellfield. Recharge to the Regional wellfield will be met through the existing canal system supplied from locally captured runoff from the C-9 Basin (Components R and S).

Location: Lower East Coast Service Area.

Counties: Broward, Miami-Dade and Palm Beach.

Assumptions and related considerations:

1) It is assumed that the western facilities of the individual utilities have sufficient capacity to meet the increased demands.

Component M

Geographic Region: Water Preserve Area - Palm Beach County

Component Title: Site 1 Impoundment – SEE COMPONENT MAP 2

Purpose: Water supply storage reservoir to supplement water deliveries to the Hillsboro Canal during the dry-season.

Operation: The reservoir will be filled during the wet-season from excess water backpumped from the Hillsboro Canal. Water will be released back to the Hillsboro Canal to help maintain canal stages during the dry-season. If water is not available in the reservoir, existing rules for water delivery to this region will be applied. Aquifer Storage and Recovery (ASR) is proposed in conjunction with the reservoir to improve water supply during dry seasons and droughts. A total of thirty (30) 5 MGD capacity ASR wells will be included in this alternative (total injection and recovery capacity is 150 MGD or about 230 cfs). Water from the Site 1 Impoundment will be injected into the ASR wells when stages in the impoundment are greater than 12.0 feet NGVD (0.5 feet of depth). Water will be recovered from the ASR wells when stages in the Hillsboro Canal are less than 7.0 feet NGVD.

Design:

1) 2,460 acres with a maximum depth of 6 feet located north and south of the Hillsboro Canal. The portion of the canal that is located within the proposed reservoir will be incorporated into the reservoir with any existing levees or roads removed so as to allow the reservoir to act as a level pool. Seepage will be collected and returned to the reservoir by two 64 cfs pumps. One will be located in the northeastern corner of the site and will be turned on when the stage in the seepage collection canal is at elevation 9.5 feet NGVD and turned off when the stage drops to elevation 8.0 feet NGVD. The other will be located in the southwest corner of the site and will be turned on when the stage in the seepage collection canal is at elevation 9.0 feet NGVD and turned off when the stage drops to elevation 8.5 feet NGVD.
2) Inflow pump capacity = 700 cfs and is to be located at the eastern end of the Hillsboro Canal. Pump is turned on when the stage in the Hillsboro Canal is equal to 7.8 feet NGVD and turned off when the canal stage drops to elevation 7.6 feet NGVD.
3) Outflow structure capacity into the Hillsboro Canal for water supply deliveries from Site 1 = 200 cfs @ 4 feet of head and consists of four, 4 ft diameter CMP gated culverts, each 70 feet long.
4) Emergency outflow structure to Water Conservation Area 2A = 700 cfs and consists of a 225 ft long weir with a crest at elevation 16.0 feet NGVD.
5) Thirty (30) – 5 MGD ASR wells (total capacity 150 MGD or about 230 cfs) to be located on the inside of the proposed eastern and southern perimeter dikes with 60 surficial wells (2 per ASR well) located on the outside of the perimeter dikes to supply the ASR wells.

Location: The Water Preserve Area Land Suitability Analysis previously identified 2,460-acre site.

Counties: Palm Beach

Assumptions and related considerations:

1) Excess storage could be discharged to Water Conservation Area 2A if a treatment facility could be added to meet Everglades' water quality standards.
2) Recovery rate of 70 percent for water stored by ASR.

Component O

Geographic Region: Water Preserve Area - Broward County

Component Title: Water Conservation Area (WCA) 3A and 3B Levee Seepage Management – SEE COMPONENT MAPS 3 and 4

Purpose: Reduce seepage from WCAs 3A and 3B to improve hydropatterns within the Conservation Areas by allowing higher water levels in the borrow canals and longer inundation durations within the marsh areas that are located east of the WCAs and west of US Highway 27. Seepage from the WCAs and marshes will be collected and directed south into the Central Lake Belt Storage Area (not a component of the Broward County subregional model). This will maintain flood protection and the separation of seepage water from urban runoff originating in the C-11 Basin and Lake Okeechobee water supply deliveries.

Operation: The L-37 and L-33 borrow canals will be held at higher stages as part of the WCA 2 seepage collection and conveyance system (Component YY). Seepage collected in the L-37 and L-33 borrow canals and from the marsh areas will be directed into the WCA 2 seepage collection and conveyance system and directed south into the Central Lake Belt Storage Area or directly to the North East Shark River Slough.

Design: New levees will be constructed west of US Highway 27 from the North New River Canal to the Miami (C-6) Canal to separate seepage water from the urban runoff collected in the C-11 Diversion Impoundment and Canal (Component Q).

1) The L-37 and L-33 borrow canals will be controlled at higher stages, elevations 7.5 feet NGVD and 7.0 feet NGVD, respectively (if different elevations), as will the marshes located east of the WCAs.
2) A divide structure will be added in the C-11 Canal, west of US Highway 27 to maintain a headwater stage of 7.0 feet NGVD and the separation of seepage water from urban runoff. Water from the C-11 west basin will be diverted south to the North Lake Belt Storage Area.

Location: Seepage collected in borrow canals along the existing eastern protective levees adjacent to WCA3. Divide structure located in C-11 Canal west of US Highway 27.

Counties: Broward

Assumptions and related considerations:

1) It is assumed that the seepage from the Water Conservation Areas meets the water quality standards necessary to achieve ecosystem restoration.

Component Q

Geographic Region: Water Preserve Area - Broward County

Component Title: Western C-11 Diversion Impoundment and Canal -- to North Lake Belt Storage Area - SEE COMPONENT MAPS 4 and 5

Purpose: Divert untreated runoff from the western C-11 basin that is presently discharged into Water Conservation Area 3A into the C-11 Stormwater Treatment Area (STA) / Impoundment prior to sending it south to the North Lake Belt Storage Area (NLBSA).

Operation: Runoff in the western C-11 Canal basin that was previously backpumped into Water Conservation Area 3A will be diverted into the C-11 STA/Impoundment and then discharged to NLBSA. If storage capacity is not available in the impoundment or NLBSA then the S-9 pump station will be used to provide flood protection for the western C-11 basin and runoff will be pumped into WCA-3A. To improve groundwater elevations in the eastern C-11 Canal basin, the S-9 seepage divide structure will be operated to maintain the western C-11 Canal stage at elevation 3.0 feet NGVD.

Design:
1) 2500 cfs diversion canal west of US Highway 27 between the C-11 and C-9 Canals and 2500 cfs conveyance capacity improvements to the C-9 Canal between S-30 and the diversion structure into NLBSA.
2) A 2500 cfs pump station in the C-11 Canal to direct runoff to the C11 STA/Impoundment (pump on elevation 4.0 feet NGVD and pump off elevation 3.0 feet NGVD or when the impoundment reaches 4 feet deep).
3) 1600 acre STA/Impoundment with a maximum depth of 4 feet.
4) Seepage collection canal and pumps for C-11 STA/Impoundment. Seepage collection canal system is maintained between elevations 4.5 and 5.3 feet NGVD by two pumps, each 120 cfs.
5) 2200 cfs structure @ 4 feet of head to discharge from the impoundment to C-11 west Canal and then to the US 27 west borrow canal.

Location: The diversion canal is located west of US Highway 27 between C-11 and C-9 Canals. The C-11 STA/Impoundment is located northwest of the intersection of US Highway 27 and C-11 Canal.

Counties: Broward, Miami-Dade

Assumptions and related considerations:
1) Flood protection component for FPL substation and mobile home park may be needed. For each facility, propose a 60 cfs pump with an on elevation of 6.0 feet NGVD and an off elevation of 5.0 feet NGVD.
2) Telemetry systems will be required for all operable structures and pump stations.

Component R

Geographic Region: Water Preserve Area - Broward County

Component Title: C-9 Stormwater Treatment Area (STA)/Impoundment - SEE COMPONENT MAP 5

Purpose: Treatment of water supply deliveries from the North Lake Belt Storage Area (NLBSA) to the C-9, C-6/C-7 and C-2/C-4 Canals. Runoff is backpumped into the NLBSA from the western C-9 Canal basin and the western C-11 Canal. The C-9 STA/Impoundment will provide treatment of urban runoff stored in the North Lake Belt Storage Area, groundwater recharge within the basin and seepage control of WCA 3 and buffer areas located west of the STA/impoundment.

Operation: Stormwater runoff stored in the NLBSA will be pumped into the C-9 STA/Impoundment for treatment and then will be released to provide water supply deliveries based on salinity control targets to the C-6, C-7 and C-2, C-4 Canals. Seepage from the C-9 STA/Impoundment will be collected and returned to the impoundment.

Design:
1) 2500-acre STA/Impoundment with a maximum depth of 4 feet.
2) Inflow structure: 1000 cfs pump (from NLBSA, to be resized as needed) SEE COMPONENT XX. (Pump on when water supply deliveries are needed to C-6, C-7, C-4 and C-2 and water level in the NLBSA is above –10.0 feet NGVD or when the depth in the STA/Impoundment is less than 4 feet above natural ground)
3) Outflow structure: Gravity structure with 1000 cfs capacity at 4 feet of head to C-6, C-7 and C-2, C-4 Canals for water supply deliveries.
4) Seepage Collection: 200 cfs recycled into the impoundment area. Seepage collection canal system maintained between elevations 2.5 and 3.0 feet NGVD by two, 100 cfs pumps.

Location: Site identified by Water Preserve Area Land Suitability Analysis

Counties: Broward

Assumptions and related considerations:
1) Additional treatment facility needed if stored water is backpumped into Water Conservation Area 3A.
2) Telemetry systems will be required for all operable structures and pump stations

Component CC

Geographical Region: Lower East Coast

Component Title: Broward County Secondary Canal System – SEE COMPONENT MAP 10

Purpose: Increase pump capacity of existing facilities (from the 2050 Base Case) and construct additional canal and pump facilities for the Broward Secondary Canal System to provide recharge to wellfields located in central and southern coastal Broward County, stabilize the salt water interface and reduce storm water discharges to tide.

Operation: When excess water is available in the basins, water is pumped into the coastal canal systems to maintain canal stages. When local water is not sufficient to maintain canal stages, canals are maintained first from local sources and then from Lake Okeechobee and the Water Conservation Areas. Local sources include the Site 1 Impoundment (Component M) and the North Lake Belt Storage Area (Component XX).

Secondary canals maintained are 1) Broward County's C-2 from the Hillsboro Canal, 2) north secondary canal from C-13, 3) south secondary canal from C-13, 4) Turnpike canal south from C-12 and 5) canal north from C-9 at levels discussed below.

Design:
Canal Conveyance: Improve canal conveyance of secondary canal located east of the Florida Turnpike from the C-12 Canal south to the Fort Lauderdale Golf and Country Club. Water will be routed eastward to recharge the aquifer and help stabilize the saltwater interface at Ft. Lauderdale. Canal conveyance improvements may also be necessary for the Old Plantation Water Control District's eastern canal and in southeastern Broward County.

Pump capacities and maintenance levels:

1) 100 cfs pump from Hillsboro to Broward County Secondary Canal (pump #1).
2) 100 cfs pump from C-13 north to Broward County Secondary Canal.
3) 100 cfs pump from C-13 south to Broward County Secondary Canal (pumps #2 and #3 described in the 2050 Base Case increased from 33 cfs to 100 cfs.
4) 100 cfs pump on the east Turnpike canal withdrawing water from the C-12 Canal (pump #4).
5) 150 cfs pump (pump #5) on the C-9 Canal for maintaining water in southeastern Broward County.

Canal improvements and control elevations:

1) Improve east and west Turnpike canals and golf course lake system between C-12 and the North New River to achieve an average top width of 200 feet (see Map 10).
2) The Turnpike canals shall be maintained at a minimum elevation of 4.0 feet NGVD.
3) Improve canal/ lake systems in southeastern Broward County and the Orangebrook Golf Course to have an average canal top width of 30 feet.
4) The southeastern Broward Canal system shall be maintained at a minimum elevation of 2.5 feet NGVD.

Location: Broward County

Assumptions and related considerations:
1) Canal levels are maintained from local basin runoff and sources. When water in not available from local sources, water is supplied to the canal systems from the regional system.
2) Canal operations do not impact existing flood control levels.

Component QQ

Geographic Region: Water Conservation Areas and Everglades National Park

Component Title: Decompartmentalization of Water Conservation Area 3

Purpose: Remove most flow obstructions to achieve unconstrained or passive flow between Water Conservation Areas 3A and 3B and North East Shark River Slough and reestablish the ecological and hydrologic connection between these areas.

Operation: Rain-driven trigger gages in Northwest Shark River Slough similar to Alternative 3. Sheetflow is directed to Everglades National Park.

Design:
Structural Changes located within the Broward County subregional model boundaries:

1) Backfill the Miami Canal in Water Conservation Area 3 from the east coast protective levee to one to two miles south of the S-8 pump station to maintain flood discharge capability. Water supply deliveries previously made through the Miami Canal will be delivered through the North New River Canal and an improved US 27 west borrow canal (see Component SS).
2) Remove structures S-340 and S-151, both located in the Miami Canal. Reconstruct the L-67A levee at S-151 location as necessary to design cross section.
3) Remove the L-68A levees (this feature is outside SFWMM model detail).
4) Degrade the L-67C levee and backfill the adjacent borrow canal.
5) Construct one (most northeastern location) of eight (8) passive weir structures located along the entire length of L-67A to promote sheetflow during high flow conditions.

The remaining changes listed below are located outside the Broward County subregional model boundary:

6) Backfill the L-67A canal from Tamiami Trail approximately 7.5 miles north.
7) Locate the S-345s (component AA) just downstream of the new termination of L-67A canal.
8) Relocate a single S-349 structure at the downstream end of L-67A canal (upstream of the S-345 structures).
9) Remove the L-29 levee and canal (south of WCA 3A and 3B) to restore sheetflow into Everglades National Park.
10) Remove the L-28 and L-28 Tieback levees and borrow canals from L-28 Tieback south to L-29.
11) Elevate Tamiami Trail (U.S. 41) through the installation of a series of bridges between L-31N and L-28 consist with conveyance capacities determined at I-75 and any increases required due to inflows downstream of I-75 and upstream of Tamiami Trail.
12) Remove the S-344, S-343A and B and S-12 structures.
13) Construct the remaining 7 passive weir structures along L-67A.

Operational Changes:

1) Operate WCA-2A import trigger using only 2A-N gage as the trigger rather than using average of 2A-N and 2A-17 gages.
2) The time series target at 2A-N was truncated at 1.25 ft above and 0.5 ft below land surface elevation.
3) The time series target at 3A-NE was truncated at 1.0 ft above and 0.5 ft below land surface elevation.
4) S-345 operations are now based on triggers at R33C26 and the NESRS-1 and NESRS-2 gages (the 3A-4 gage is no longer used).
5) S-349 structure operations are the same as the S-345's operations.

Location: Within the existing boundaries of the Water Conservation Areas and Everglades National Park.

Counties: Broward, Miami-Dade

Assumptions and related considerations:
1) Potential increases in hydropatterns in dry areas and decrease in hydropatterns in deep water areas.
2) Tradeoff between water levels and hydroperiods in central and south central Water Conservation Area 3A and Everglades National Park.
3) Additional S-345s are needed to ensure that significant dry season flows into WCA-3B and ultimately Everglades National Park can be achieved.
4) Miccosukee Tribal Lands adjacent to L-29 and Tamiami Trail will not be impacted.

Component SS

Geographic Region: Everglades Agricultural Area (EAA) and Miami-Dade County

Component Title: Reroute Miami-Dade County Water Supply Deliveries – SEE COMPONENT MAP 11

Purpose: Reroute water supply deliveries made to Miami-Dade County from the Miami and Tamiami Canals and Water Conservation Area 3 (WCA 3) to the North New River Canal due to the backfilling of the Miami Canal as part of the decompartmentalization of WCA 3.

Operation: Send water supply deliveries from Lake Okeechobee to Miami-Dade County southeast through the North New River Canal in the Everglades Agricultural Area (EAA) (L-20, L-19, L-18) to S-150. From S-150 send deliveries into L-38W and at the southern terminus of L-38W south through a 1500 cfs pump to the borrow canal along the west side of US Highway 27.

Design:
1) Double the capacity of the North New River Canal (L-18) south of the proposed EAA Storage Reservoir (see Component G – not a component of the South Broward subregional model) to convey additional water supply deliveries to Miami-Dade County as necessary.
2) Double the capacity of S-351 and S-150 to pass additional water supply deliveries to Miami-Dade County as necessary.
3) Improve conveyance in the L-38W borrow canal to 2000 cfs as necessary.
4) Construct an inverted siphon with 1500 cfs capacity to pass water supply deliveries from the L-38 West borrow canal to the US 27 west borrow canal. This will maintain the separation of Lake Okeechobee water supply deliveries and WCA 2 seepage and overflow water.
5) Improve conveyance in the borrow canal on the west side of US Highway 27 between L-38W and the Miami Canal as necessary to pass the additional flows.
6) Pump intake at S-7 lowered to elevation 8.0 feet NGVD.

Location: EAA and Water Conservation Area 3.

Counties: Palm Beach, Broward, and Miami-Dade

Assumptions and related considerations:
1) Operational flexibility is reduced since there is only one delivery route to Miami-Dade County (back-up routes have been eliminated).

Component XX

Geographic Region: Water Preserve Area - Miami-Dade County

Component Title: North Lake Belt Storage Area (NLBSA) - SEE COMPONENT MAP 6

Purpose: In-ground reservoir to capture a portion of runoff from C-6, western C-11 and C-9 Basins. The in-ground reservoir with perimeter seepage barrier will allow storage of untreated runoff without concerns of ground water contamination. The stored water will be used to maintain stages during the dry season in the C-9, C-6, C-7, C-4 and C-2 Canals and to provide deliveries to Biscayne Bay to aid in meeting salinity targets.

Operation: Runoff from the C-6 basin (west of the turnpike), western C-11, and C-9 basins is pumped and gravity fed into the in-ground reservoir. Inflows cease when stages reach ~5.0 feet NGVD (0 feet above adjacent land elevation).

Outflows for water supply are pumped into the C-9 Storm Water Treatment Area (STA)/Impoundment prior to delivery to the C-9, C-6, C-7, C-4 and C-2 Canals.

Water from the reservoir can be withdrawn down to a stage of -15 feet NGVD (up to 20 feet of working storage & maximum head on the seepage barrier).

Prioritization of outflows: If water levels in the NLBSA are from between +5.0 feet NGVD and 0.0 feet NGVD, flows will be discharged to Biscayne Bay via the C-2 Canal. If water levels in the NLBSA are from between 0.0 feet NGVD and -10 feet NGVD, flows will be discharged to C-9, C-6, C-7, C-4 and C-2 Canals only to prevent salt water intrusion. If water levels in NLBSA drop to levels between –10 feet NGVD and -15 feet NGVD, discharge will be limited to the C-9 Canal only to avoid water shortage restrictions.

The storage area is 4,500 acres in size and is used to capture a portion of the runoff from the C-6, C-9 and C-11 basins. (Note: SFWMM simulation assumes 5,120 acres of surface area. To simulate equivalent working storage volumes, the simulated water levels are higher from those prescribed here.)

Design:

1) Reservoir: 4,500 acres with subterranean seepage barrier extending down 120 feet below ground around the perimeter to enable drawdown during dry periods, prevent seepage and to prevent water quality impacts.
2) Inflow Structures: 2,500 cfs gravity structure @ 0.5 feet head, from C-11W. 600 cfs pump from C-9 (pump on 3.0 feet NGVD and pump off 2.5 feet NGVD). 300 cfs pump (pump on 3.5 feet NGVD and pump off 3.0 feet NGVD) from C-6 Canal west of the proposed divide structure which will consist of a gated spillway to maintain an upstream stage of 3.5 feet NGVD.
3) Outflow Structures:1,000 cfs pump (pump on between +5.0 and –10.0 feet NGVD and pump off –10.0 feet NGVD or when the C-9 STA/Impoundment is 4 feet deep) to C-9 STA/Impoundment for treatment prior to deliveries to C-6, C-7, C-4 and C-2 to prevent saltwater intrusion in coastal canals. (Stormwater Treatment Area detention time requirements need to be determined. Pretreatment in reservoir may reduce size requirements of treatment area). Deliveries from NLBSA assumed to be divided as follows, 70 percent to C-9 STA/Impoundment, 10 percent to southwest STA, 10 percent to south STA and 10 percent to northeast STA.
4) Southwest STA design: 100 cfs inflow pump (pump on between 5.0 and –10.0 feet NGVD in NLBSA when water supply deliveries are required to C-6, C-4 and C-2 Canals), 100 cfs gravity discharge structure to the C-6 Canal and two, 180 cfs seepage control pumps on the perimeter seepage canal.
5) South STA design: 100 cfs inflow pump (pump on between 5.0 and –10.0 feet NGVD in NLBSA when water supply deliveries are required to C-6, C-4 and C-2 Canals), 100 cfs gravity discharge structure to the C-6 Canal and two, 150 cfs seepage control pumps on the perimeter seepage canal.

6) Northeast STA design: 100 cfs inflow pump (pump on between 5.0 and –15.0 feet NGVD in NLBSA when water supply deliveries are required to C-9 Canal) and 100 cfs gravity discharge structure to the C-9 Canal.
7) A stage divide in the C-9 Canal will be located east of the outflow structure from the C-9 STA/Impoundment. It will consist of a gated culvert with a headwater stage of 5.5 feet NGVD and a tailwater stage of 2.5 feet NGVD and a capacity of 500 cfs. It will pass Lake Okeechobee water supply deliveries to the C-9 Canal when other sources are not available.
8) Canal: 800 cfs canal capacity - Water supply discharges are routed to C-4/C-2 via a canal to be located east of the Snapper Creek canal (Northwest wellfield protection canal system).
9) 2-1,400 cfs delivery structures, one each at the new canal's confluence with C-6 and C-4. SEE COMPONENT MAP 6

Location: Reservoir would be located within the area proposed for rock mining by the Lake Belt Issue Team. It would be sited north of Miami Canal (C-6) and South of the C-9 Canal to minimize impacts to the Northwest wellfield.

Counties: Miami-Dade

Assumptions and related considerations:
1) No adverse effect of a subterranean wall on Miami-Dade County's NW wellfield.
2) Treatment facility needed if stored water is backpumped to the Everglades.
3) All water quality considerations will be addressed regarding releases from the reservoir to the water supply wellfields.
4) Impacts on the cone of influence of the Northwest Wellfield and its effect on wetland mitigation around the wellfield.
5) Limestone Filter Treatment system within the NLBSA may be developed through use of compartmentalization of rock mining excavation pattern.
6) Telemetry systems will be required for all operable structures and pump stations.
7) Any specific water quality considerations regarding capture of C-6 basin runoff will be addressed during the detailed design stage.

Component YY

Geographic Region: Water Conservation Area -Water Preserve Area - Lake Belt

Component Title: Divert WCA 2 flows to Central Lake Belt Storage - SEE COMPONENT MAP 11

Purpose: Capture excess water in Water Conservation Area 2B (WCA 2B) to reduce stages above desired target levels in WCA 2B and to divert water through improved L-37 and L-33 Borrow Canals to 1) North East Shark River Slough (NESRS) to meet targets or 2) Central Lake Belt Storage Area.

Operation: Surface water in WCA 2B above target levels will overflow through 3 structures along L-35 and L-35A to the North New River Canal along with seepage from WCA 2B and will be pumped to the L-37 borrow canal. The North New River Canal, L-37 and L-33 borrow canals will be improved to accept this additional flow along with the seepage collected from WCA 3. This water will be pumped to NESRS if the Slough is below target levels or into a lined reservoir to be located south of the confluence of the L-33 borrow canal and the C-6 Canal referred to as the Central Lake Belt Storage Area (CLBSA). SEE COMPONENT S.

Design:
1) 3- diversion structures with 120 cfs capacity @0.5 feet of head and 350 cfs capacity @4.0 feet of head along the southern perimeter of WCA 2B to pass flows greater than targets.
2) Structure S-124 is removed. A basin divide structure will be located immediately downstream of the confluence of L-35A and L-35 borrow canals. It will have a control elevation of 4.25 feet NGVD in order to separate Water Conservation Area 2B overflow from water supply deliveries made southeast in the North New River Canal.
3) Construct a divide structure northeast of the easternmost WCA 2B diversion structure with a crest at elevation 6.3 feet NGVD to separate WCA 2B flows directed south.
4) 1,500 cfs pump station to divert overflow and seepage from the L-35 borrow canal to the L-37 borrow canal. Pump on when water levels in WCA 2B are 1.25 feet above target and pump off when water levels in WCA 2B drop below 1.0 foot above target.
5) Culvert with 1,500 cfs capacity to pass flows generated by both seepage collection in the L-35A and L-35 borrow canals and flows above targets in WCA 2B from the L-38 East borrow canal to the L-37 borrow canal.
6) Improved conveyance of L-37 and L-33 borrow canals to 3,000 cfs to handle WCA 2B flows plus seepage from WCA 3.
7) Remove S-9XN and S-9XS or improve structures to accommodate increased flows.

Location: The overflow structures are located along the southern levee of WCA 2B. L-37 and L-33 borrow canal improvements are located east of the Protective levees and 0.5 mile west of US Highway 27 between the North New River Canal and the Miami Canal.

Counties: Broward

Assumptions and related considerations:
1) Prioritization of use of Central Lake Belt Storage Area water.
2) Telemetry systems will be required for all operable structures and pump station.

Component ZZ

Geographic Region: Water Conservation Area -Water Preserve Area - Lake Belt

Component Title: Divert WCA 3 flows to Central Lake Belt Storage Area – SEE COMPONENT MAP 6

Purpose: Capture excess in Water Conservation Area 3A (WCA 3A) and WCA 3B to reduce stages above target stages in Water Conservation Area 3 and to divert water through modified structures at S-9 and S-31 to the Central Lake Belt Storage Area via the L-33 borrow canal.

Operation: When surface water in WCA 3B exceeds target depths by 0.1 feet, it will be diverted to the Central Lake Belt Storage Area via the L-33 borrow canal. When surface water in WCA 3A near S-9 exceeds target depths by 1.0 foot, water will be diverted to the Central Lake Belt Storage Area via the L-33 borrow canal.

Design:

Outflow Structures -	500 cfs structure @ 2.0 feet of head (new structure) at S-9 (WCA 3A).
	700 cfs structure (modify existing S-31 if necessary) (WCA 3B)

Location: The eastern levees of WCA 3.

Counties: Broward and Miami-Dade

Assumptions and related considerations:
1) Prioritization of use of Central Lake Belt Storage Area water.
2) Telemetry systems will be required for all operable structures and pump stations

Component AAA

Geographic Region: Lower East Coast Service Areas

Component Title: Lower East Coast (LEC) Water Conservation

Purpose: The purpose of this component is to reduce the public water supply demands through the full implementation of the SFWMD's current mandatory water conservation program. The regional affect from the implementation of water conservation would include greater efficiency of the water utilized by the public water supply utilities and a year round reduction of the volume of water delivered from the regional water resource facilities to recharge coastal canals and wellfields.

Operation: On average, a six percent reduction in the projected 2050 withdrawals will be applied to each service area uniformly over each month of the simulation period. The percentage reduction will be based on the anticipated water conservation measures for each of the service areas.

Design: The current, mandatory water conservation program of the SFWMD was applied throughout the service area to the public water supply demand projections using IWR-Main forecasts. The percentage reduction is a result of the conversion of residential end users to ultra-low flow fixtures and daytime restrictions on lawn watering throughout the service areas, both practices are required by existing regulations. The percentage of the population using water-conserving fixtures is increased, thereby, reducing public water supply demands when compared to the 2050 Base. The percentage reduction is calculated from the 2050 Base that contains a moderate application of conservation techniques. The reduction applied in this component assumes full implementation of the District's water conservation program as predicted by IWR-Main.

The 2050 Base utility demands in the Lower East Coast Service Area were reduced by six percent on average in this Alternative.

Location: Lower East Coast

Counties: Palm Beach, Broward, Miami-Dade

Assumptions and related considerations:

1) Water conservation measures apply to all sources of water. It is most likely that demands met by reuse water would not be affected by restrictions in irrigation.